

acid sequence counting from the chromophore, such that the substituted fluorescent protein exhibits an increase in the intensity of its fluorescence at a temperature of 30°C or above when expressed in a host cell.

24. (New) A fluorescent protein according to claim 23, which further comprises an amino acid substitution involving one or more of the three amino acids residues comprising the chromophore.

25. (New) A fluorescent protein according to claim 23, wherein an amino acid selected from the group consisting of Leu, Ile, Val, Gly and Ala is substituted for the amino acid residue at position 1 upstream from the chromophore.

26. (New) A fluorescent protein according to claim 23, which is further substituted in that a His residue is submitted for the second amino acid residue of the chromophore.

27. (New) A nucleic acid molecule comprising a nucleotide sequence encoding a fluorescent protein derived from wild-type Green Fluorescent Protein (GFP) having a chromophore having three amino acid residues selected from the group consisting of SYG, SHG, TYG and THG, and in which the amino acid substitution at least at

position 1 upstream from the chromophore is different from the amino acid at the corresponding position of the wild-type GFP amino acid sequence counting from the chromophore, such that the substituted fluorescent protein exhibits an increase in the intensity of its fluorescence at a temperature of 30°C or above, when expressed in a host cell.

28. (New) A nucleic acid molecule according to claim 27, wherein an amino acid selected from the group consisting of Leu, Ile, Val, Gly and Ala is substituted for the amino acid residue at position 1 upstream from the chromophore.

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29. (New) A nucleic acid molecule according to claim 28, wherein His is substituted for the second amino acid residue of the chromophore.

30. (New) An expression vector comprising suitable expression control sequences operatively linked to a nucleic acid molecule according to claim 28.

31. (New) A recombinant host cell comprising an expression vector that comprises a suitable control sequence operatively linked to a nucleic acid molecule according to claim 28.

32. (New) A fusion compound comprising a protein of interest fused to the fluorescent protein of claim 23.

33. (New) A nucleic acid molecule comprising a nucleotide sequence encoding a protein of interest fused to a nucleotide encoding the fluorescent protein of claim 23.

34. (New) A method of detecting the expression of a protein of interest in a cell which method comprises:

i) introducing into a cell a nucleic acid molecule comprising a nucleotide sequence encoding a protein of interest fused to a nucleic acid sequence encoding the fluorescent protein of claim 23, said nucleic acid molecule being operatively linked and under the control of a suitable expression control sequence;

ii) culturing the cell under conditions suitable for the expression of said protein of interest; and

iii) detecting the expression of said protein of interest by measuring the fluorescent of said cell by optical means.

35) (New) A method of simultaneously monitoring the expression of two or more different proteins of interest in a cell which method comprises:

i) providing two or more different nucleic acid molecules wherein each said nucleic acid molecule comprises a nucleotide sequence encoding a protein of interest fused to a nucleotide sequence encoding the fluorescent protein of claim 23 and being operatively linked to and under the control of a suitable expression control sequence and wherein each said fluorescent protein emits at a different wavelength;

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ii) culturing the cell under conditions suitable for the expression of said proteins of interest; and

iii) comparing the expression of said proteins of interest in said cell by measuring the fluorescence of each of said fluorescent proteins by optical means.

36. (New) A method of detecting the expression of a protein of interest in a cell which method comprises:

iv) introducing into a cell a nucleic acid molecule comprising a nucleotide sequence encoding a protein of interest fused to a nucleic sequence encoding the fluorescent protein of

claim 27, said nucleic acid molecule being operatively linked and under the control of a suitable expression control sequence;

v) culturing the cell under the condition suitable for the expression of said proteins of interest; and

vi) detecting the expression of said protein of interest by measuring the fluorescence of said cell by optical means.

37) (New) A method of simultaneously monitoring the expression of two or more different proteins of interest in a cell which method comprises:

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iv) providing two or more different nucleic acid molecules wherein each said nucleic acid molecule comprises a nucleotide sequence encoding a protein of interest fused to a nucleotide sequence encoding the fluorescent protein of claim 27 and being operatively linked to and under the control of a suitable expression control sequence and wherein each said fluorescent protein emits at a different wavelength;

v) culturing the cell under conditions suitable for the expression of said proteins of interest; and

vi) comprising the expression of said proteins of interest in said cell by measuring the fluorescence of each of said fluorescent proteins by optical means. -40